

Math Academy 2011

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Shift 6, 7 & 9

Which concert has the greatest number sold?

<u>Concert</u>	<u>Tickets Sold</u>
Beethoven	385,204
Mozart	259,593
Hayden	285,447
Chopin	327,982

So?

- About how many sold altogether?
- Which one is the least popular?
- Did they reach a goal of 1 million?
- How many more for... than ...?
- Which sold closest to 300,000 tickets?

Or just consider putting the data on the board and asking students what the data might represent.

- 385, 204
- 259,593
- 285,447
- 327,982

Shift #6

- Build from graphs, charts, and tables.

Rationale

- Asking all the questions milks the data for more than one simple exercise and reinforces many aspects of the number sense curriculum.
- This will best prepare students to make sense of data and draw conclusions from data.

Power statements

- So?
- Lots of other questions about the data.

How do we do this?

- Ask questions about the data that makes the students think beyond the obvious.
- Present just the data and ask questions.
- Purposely put a mistake in the data for the students to use reasoning to discover.

What should be in an effective mathematics classroom?

- An abundance of problems drawn from data presented in tables, charts, and graphs.
- Opportunities for students to make conjectures and draw conclusions from data.
- Frequent conversations of data in tables and charts into various types of graphs with discussions of their advantages, disadvantages, and appropriateness.

Journal

- How will your teaching change because of the use of Shift #6?

Shift #7

Carmelo's Pizza

<u>Small Pies</u>	<u>Medium Pies</u>
6 inch in diameter	9 inches in diameter
6 slices	8 slices
\$5.75	\$8.95

SO?

Discussion

- Which pizza is a better buy?
- How much cheaper is one slice of the small pizza?
- I need to feed 20 people. Which pizza should I buy, how many, and what will it cost?

Shift #7

- Tie the math to such questions as How big? How much? How far? To increase the natural use of measurement throughout the curriculum.

Rationale

- No strand in the curriculum is consistently as weak as measurement and no chapter is more consistently skipped or raced through than the one on measurement.
- Used all the time in real world by real people.

Power Statements

- How big?
- How much?
- How far?

How do we do this?

- Make it relevant
- Make it interesting
- Make it thought provoking
- Examples-
 - How big is your desk?
 - How many sheets of paper is needed to...
 - How many rolls of toilet paper would it take to surround the school?
 - How heavy is your textbook?

What should be in an effective mathematics classroom?

- Lots of questions are included that ask How big? How much? How far? How many?
- Measurement is an ongoing part of daily instruction.
- Students are frequently asked to find and estimate measures, to use measuring and to describe the relative size of measure that arise during instruction.
- The teacher offers frequent reminders that much measurement is referential- that is, we use a referent (such as your height or a sheet of paper) to estimate measures.

Journal

- How will your teaching change because of the use of Shift #7?

Shift #9

Find the quotient of $15 \div 2.29$
focus on procedure and how
many spaces you move the
decimal place over.

You have \$15. The price of a
Burger King Whopper has
been lowered to \$2.29. How
many can you buy?

Discussion

- Which one would you rather solve? Why?
- What other questions could be asked with the second problem that leads to deeper understanding?
- This involves rounding, estimating, and justifying.
- No longer the “Just follow the rules” approach.

Shift #9

- Embed the mathematics in realistic problems and real-world contexts.

Rationale

- Which class (or question) would you want to answer?
- Which class (or question) would you want your child in?
- Which problem was more exciting and you could relate to?

We will not achieve our mathematical goals unless we change how the material is taught.

Power Statements

- When would you use this math?
- Can you give me an example?

How do we do this?

Make the math applicable to children.

Ask questions that are engaging and interesting.

What should be in an effective mathematics classroom?

- Frequent embedding of the mathematical skills and concepts in real-world situations and contexts.
- Frequent use of “So, what questions arise from looking at this situation?”
- Problems that emerge from teachers asking, “When and where do normal human beings encounter the mathematics I need to teach?”

Task/Plan

- Journal- How will your teaching change because of the use of Shift #9?
- In teams of two, create a quick lesson plan using a new enVision lesson and the Core and More Lesson Checklist with a focus on your assigned topic (data and graphs, measurement, or problem solving).

Power Statements

<p>Convince me</p> <p>How do you know?</p> <p>How big?</p> <p>How much?</p> <p>How far?</p> <p>Why?</p> <p>How did you get that?</p> <p>Is that reasonable?</p> <p>Who has a different way?</p> <p>How do you know?</p> <p>Can you explain your thinking?</p> <p>How did you get that answer?</p> <p>How do you see it?</p> <p>Explain how you knew that</p>	<p>Show me</p> <p>Draw it</p> <p>About how much is that?</p> <p>What is 10 or 100 or 1000 more or less?</p> <p>What is ten times that number?</p> <p>What is the most or greatest? How do you know?</p> <p>What is the least or smallest? How do you know?</p> <p>What else can you tell me about these numbers?</p> <p>So?</p> <p>When would you use this math?</p> <p>Can you give me an example?</p>
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